SEQUENCE LISTING

<110> Jessberger, et al.

<120> METHODS FOR IDENTIFYING, TREATING, AND INDUCING INFERTILITY USING
       SMC1 BETA

<130> 29636/39363A

<150> US 60/499,317
<151> 2003-08-29

<160> 13

<170> PatentIn version 3.2

<210> 1
<211> 4056
<212> DNA
<213> Mus musculus

<400> 1
ctgaggcacg gcgcgcagcc atggggcacc ttgagctgct gctcgtggag aattttcaagt   60

cgtggcgagg ccgccaggtc atcggccctt tcaagaggtt cacctgcatc attggcccca   120

acggctccgg aaaatctaat gtaatggatg cacttagttt tgtaatggga gaaaagacaa   180

ctaatttaag agtaaaaaac attcaagaac ttattcatgg agcacatact ggaaaacctg   240

tttcttcttc tgcaagtgtg acaattatat acatagagga cagtggagaa gagaaaacat   300

tcacaaggat tatccgaggg gggtgctcag aatatcattt tggggataaa cccgtgagtc   360

gttctgtgta tgtagcccag ttggaaaaca taggcataat agtcaaagca cagaactgtc   420

tagttttttca gggaactgta gagtcaatat ccatgaaaaa gcccaaagag agaacccagt   480

tttttgaaga aatcagtact tcaggagaat ttataggaga atatgaggca aagaaaaaga   540

aattacaaaa agctgaagaa gatgcacaat ttcattttaa tgtgaaaaaa aatgtagctg   600

cagaacggaa gcatgcaaaa atagagaaag aagaggcaga acattaccaa aatctccttg   660

aagaattgaa aataaacaag atacaactga tgcttttcca actatattat aatgaggaaa   720

aaatcaatgt tttaaacact gaattagagc aaatggacgg gaatttaagt gttgtaaaag   780

acactctttc tcaccatgaa aacatattta agctaagaa aaaggattat ggaatgttaa   840

ctagacaact acagcaaaca gcaaaagaac tgaaatctgt tgaagcaatt ttaaatcaga   900

agaggcctca gtacattaag gctaagaaa acacttctca tcatctaaaa aaattagatt   960

tgtctaagaa attgataaca gacaatgaaa aacaatgttc taagcaggaa gatggcatac 1020

gagccttagt ggcagaactg gctgatttgg atagagcatg gaaaagtttt gaaaagcaga 1080

tggaagagaa aatcttacaa aaagggcgag atattgaatt ggaaaatagc cagctggatc 1140

gttacaaact gcttaaggag caagtcagac ggaaggttgg tataatgaca caacaactgg 1200

aaaaactgca gtgggaacag aaggcagaaa agaaagact tgcatttgaa aagaggaggc 1260

```
atggagacac tcagggaaat ctaaaacaga taaaagaaca aatagaagag cataaaaaac   1320

gaatagagaa gttggaggaa tatacaaaga cgtgcatgga ttgcttggaa gataaaaaac   1380

agcaagaaga ggccctgaaa aaagaaattg aaaatacgaa atcaagaatg tctgaagtta   1440

atgaagaatt gagtcttatt agaaatgaat tgcagaatgc tggaattgat aaccatgagg   1500

gaaaacgtca gcagaaaaga gcagaagttc tggaacacct taaaagactt tacccagatt   1560

ctgtgtttgg aagactgctt gatctgtgtc atcctattca taagaagtac cagctggctg   1620

tgactaagct tttttggccgg tacatggttg ccattgttgt agcctcagaa aagatagcga   1680

aagattgtat tcgatttctg aaggcagaaa gagctgaacc tgagacattc cttgctctag   1740

attaccttga tatcaagcca atcaatgaac gactaaggga aattaaaggc tgtaagatga   1800

tgatcgatgt tataaagacc cagtttcctc agctgaagaa agtgattcag tttgtttgtg   1860

gaaatggcct tgtctgtgag actgtggaag aagcaagaca tattgcattc ggtggacctg   1920

aaagacggaa ggcagtagca cttgatggaa cactgttttt gaaatctgga gtgatttctg   1980

gagggtcaag tgacttaaag cacaaagctc tgtgctggga tgagaaagag ttacacaatc   2040

taagagacaa aagaagccaa ctagtccaag agctaaagga gttaatgaag acactccgca   2100

aggaaacaga tctgaagcaa atacagactt tagtacaagg aaccaataca cgactcaaat   2160

attcacaaaa tgaactagag atgattaaaa agaagcacct tgctacattt taccgggaac   2220

aatctcagct acaaagtgaa ttactgaata ttgattctca atgtactatg ttgagtgaag   2280

gaatcaacaa acagcaacaa aaaattgaag aatttcaaga taagatagat gaggtagaag   2340

atgacatatt ccaagacttc tgtgaagaaa ttggtgtgga aaatatccgt gaatttgaga   2400

ataaacatgt taaacagcag caagaaaatg atcaaaaaag attagagttt gaaaaacaaa   2460

aaactcggct taatattcag ctcgaatata gtcgaaatca gcttaagaag aaactgaata   2520

atatcgacac attaaaaacc acaatccaga agggcaaaga agatattgat aacctaaaaa   2580

agaccgaaga agaatgtctg aaaattgttg aggaactcat ggtgaagcaa gagcaaatta   2640

aggaagtgct tgccacacag agttccaaca ttgaaaaaat tcacatacaa attgaagagg   2700

aacgcaagaa ggttttggct gttgataggg aagttggaaa attacagaag gaagttgtaa   2760

tcattcaggg ttctttggaa cagaaactgc tagagaaaca taacttgctg ctagattgca   2820

aagttcaaga cattgacata agtcttgtgc tggggtcatt ggaggacatc attgaaatgg   2880

agctaactga aacagaaagc acccaggcaa cagctgatat ctatgagaaa gaagcatcca   2940

tccaaataga ctacagccct ctaagggagg atttaaaggc tctacaatca gataaggagg   3000

tggaggccca ccttacactc cttctacagc aagtagcatc ccaagaaaac actctactga   3060

agactacagc tccaaacttg cgagcacagg agaacttaaa gactgtcaga gacaagtttc   3120

aagaatctgc agatgttttt gaggccagca gaaaggaagc cagaatatgt aggcaagagt   3180
```

```
ttgaacaggt gaaaagacgg aggtacgatg ctttcagtca atgttttgaa cacatctcag   3240

tctcaattga tcaaatctac aagaagctct gcaggaacaa cagtgcccag gcatttctta   3300

gcccagagaa ccctgaagaa ccttacttag atggaattag ctacaactgt gtggctccag   3360

gcaaacggtt catgcccatg acaacctgt caggggagaa aaagtgtgtg gctgctctgg   3420

ctcttctgtt tgctgtacac agttttcggc ctgctccatt ctttgtatta gatgaagtag   3480

atgcagccct ggacaatact aacattggca agtctcaag ttacatcaaa gagcagagtc   3540

aggaacagtt tcagatgata atcatttccc tgaaagagga gttctactcc aaagctgatg   3600

cactgatagg cgtctaccca gagcacaatg agtgcatgtt cagccatgtg ttgactctgg   3660

accttttccaa gtatccagac accgaagacc aagaaggcag caggagccac cggaagccca   3720

gagtaccacg agtatcaatg tctccaaagt ctccccagtc tcgttagaaa tgagtatact   3780

cttgaacagc caccagctat agaagcttta ccctgaccct gtggaggtca ggccagtctc   3840

tgtttagacc catgtgtcat agaagaaaaa tctcttacca ttttagtaga aaaaaaacta   3900

tagcccactc agctaaggag tgctcagtgt cattccaatg gaggttccta tggcatcaat   3960

gaatgaggta tatggttttc ttttgctttt aagggctttt gttttgaaac aaattggtta   4020

taaaatttg aattctgcaa aaaaaaaaaa aaaaaa                                4056
```

<210> 2
<211> 1248
<212> PRT
<213> Mus musculus

<400> 2

```
Met Gly His Leu Glu Leu Leu Leu Val Glu Asn Phe Lys Ser Trp Arg
1               5                   10                  15

Gly Arg Gln Val Ile Gly Pro Phe Lys Arg Phe Thr Cys Ile Ile Gly
            20                  25                  30

Pro Asn Gly Ser Gly Lys Ser Asn Val Met Asp Ala Leu Ser Phe Val
        35                  40                  45

Met Gly Glu Lys Thr Thr Asn Leu Arg Val Lys Asn Ile Gln Glu Leu
    50                  55                  60

Ile His Gly Ala His Thr Gly Lys Pro Val Ser Ser Ser Ala Ser Val
65                  70                  75                  80

Thr Ile Ile Tyr Ile Glu Asp Ser Gly Glu Glu Lys Thr Phe Thr Arg
                85                  90                  95

Ile Ile Arg Gly Gly Cys Ser Glu Tyr His Phe Gly Asp Lys Pro Val
```

                  100   105   110

        Ser Arg Ser Val Tyr Val Ala Gln Leu Glu Asn Ile Gly Ile Ile Val
                115   120   125

        Lys Ala Gln Asn Cys Leu Val Phe Gln Gly Thr Val Glu Ser Ile Ser
                130   135   140

        Met Lys Lys Pro Lys Glu Arg Thr Gln Phe Phe Glu Glu Ile Ser Thr
        145   150   155   160

        Ser Gly Glu Phe Ile Gly Glu Tyr Glu Ala Lys Lys Lys Lys Leu Gln
                        165   170   175

        Lys Ala Glu Glu Asp Ala Gln Phe His Phe Asn Val Lys Lys Asn Val
                        180   185   190

        Ala Ala Glu Arg Lys His Ala Lys Ile Glu Lys Glu Glu Ala Glu His
                195   200   205

        Tyr Gln Asn Leu Leu Glu Glu Leu Lys Ile Asn Lys Ile Gln Leu Met
                210   215   220

        Leu Phe Gln Leu Tyr Tyr Asn Glu Glu Lys Ile Asn Val Leu Asn Thr
        225   230   235   240

        Glu Leu Glu Gln Met Asp Gly Asn Leu Ser Val Val Lys Asp Thr Leu
                        245   250   255

        Ser His His Glu Asn Ile Phe Lys Ala Lys Lys Lys Asp Tyr Gly Met
                        260   265   270

        Leu Thr Arg Gln Leu Gln Gln Thr Ala Lys Glu Leu Lys Ser Val Glu
                275   280   285

        Ala Ile Leu Asn Gln Lys Arg Pro Gln Tyr Ile Lys Ala Lys Glu Asn
                290   295   300

        Thr Ser His His Leu Lys Lys Leu Asp Leu Ser Lys Lys Leu Ile Thr
        305   310   315   320

        Asp Asn Glu Lys Gln Cys Ser Lys Gln Glu Asp Gly Ile Arg Ala Leu
                        325   330   335

        Val Ala Glu Leu Ala Asp Leu Asp Arg Ala Trp Lys Ser Phe Glu Lys
                340   345   350

Gln Met Glu Glu Lys Ile Leu Gln Lys Gly Arg Asp Ile Glu Leu Glu
        355   360   365

Asn Ser Gln Leu Asp Arg Tyr Lys Leu Leu Lys Glu Gln Val Arg Arg
    370   375   380

Lys Val Gly Ile Met Thr Gln Gln Leu Glu Lys Leu Gln Trp Glu Gln
385   390   395   400

Lys Ala Glu Lys Glu Arg Leu Ala Phe Glu Lys Arg Arg His Gly Asp
                405   410   415

Thr Gln Gly Asn Leu Lys Gln Ile Lys Glu Gln Ile Glu Glu His Lys
            420   425   430

Lys Arg Ile Glu Lys Leu Glu Glu Tyr Thr Lys Thr Cys Met Asp Cys
        435   440   445

Leu Glu Asp Lys Lys Gln Gln Glu Glu Ala Leu Lys Lys Glu Ile Glu
    450   455   460

Asn Thr Lys Ser Arg Met Ser Glu Val Asn Glu Glu Leu Ser Leu Ile
465   470   475   480

Arg Asn Glu Leu Gln Asn Ala Gly Ile Asp Asn His Glu Gly Lys Arg
                485   490   495

Gln Gln Lys Arg Ala Glu Val Leu Glu His Leu Lys Arg Leu Tyr Pro
            500   505   510

Asp Ser Val Phe Gly Arg Leu Leu Asp Leu Cys His Pro Ile His Lys
        515   520   525

Lys Tyr Gln Leu Ala Val Thr Lys Leu Phe Gly Arg Tyr Met Val Ala
    530   535   540

Ile Val Val Ala Ser Glu Lys Ile Ala Lys Asp Cys Ile Arg Phe Leu
545   550   555   560

Lys Ala Glu Arg Ala Glu Pro Glu Thr Phe Leu Ala Leu Asp Tyr Leu
                565   570   575

Asp Ile Lys Pro Ile Asn Glu Arg Leu Arg Glu Ile Lys Gly Cys Lys
            580   585   590

Met Met Ile Asp Val Ile Lys Thr Gln Phe Pro Gln Leu Lys Lys Val
        595   600   605

Ile Gln Phe Val Cys Gly Asn Gly Leu Val Cys Glu Thr Val Glu Glu
    610   615   620

Ala Arg His Ile Ala Phe Gly Gly Pro Glu Arg Arg Lys Ala Val Ala
625   630   635   640

Leu Asp Gly Thr Leu Phe Leu Lys Ser Gly Val Ile Ser Gly Gly Ser
            645   650   655

Ser Asp Leu Lys His Lys Ala Leu Cys Trp Asp Glu Lys Glu Leu His
            660   665   670

Asn Leu Arg Asp Lys Arg Ser Gln Leu Val Gln Glu Leu Lys Glu Leu
            675   680   685

Met Lys Thr Leu Arg Lys Glu Thr Asp Leu Lys Gln Ile Gln Thr Leu
    690   695   700

Val Gln Gly Thr Asn Thr Arg Leu Lys Tyr Ser Gln Asn Glu Leu Glu
705   710   715   720

Met Ile Lys Lys Lys His Leu Ala Thr Phe Tyr Arg Glu Gln Ser Gln
            725   730   735

Leu Gln Ser Glu Leu Leu Asn Ile Asp Ser Gln Cys Thr Met Leu Ser
            740   745   750

Glu Gly Ile Asn Lys Gln Gln Gln Lys Ile Glu Glu Phe Gln Asp Lys
            755   760   765

Ile Asp Glu Val Glu Asp Asp Ile Phe Gln Asp Phe Cys Glu Glu Ile
    770   775   780

Gly Val Glu Asn Ile Arg Glu Phe Glu Asn Lys His Val Lys Gln Gln
785   790   795   800

Gln Glu Asn Asp Gln Lys Arg Leu Glu Phe Glu Lys Gln Lys Thr Arg
            805   810   815

Leu Asn Ile Gln Leu Glu Tyr Ser Arg Asn Gln Leu Lys Lys Lys Leu
            820   825   830

Asn Asn Ile Asp Thr Leu Lys Thr Thr Ile Gln Lys Gly Lys Glu Asp
            835   840   845

Ile Asp Asn Leu Lys Lys Thr Glu Glu Glu Cys Leu Lys Ile Val Glu
    850   855   860

-6-

```
Glu Leu Met Val Lys Gln Glu Gln Ile Lys Glu Val Leu Ala Thr Gln
865             870             875             880


Ser Ser Asn Ile Glu Lys Ile His Ile Gln Ile Glu Glu Glu Arg Lys
                885             890             895


Lys Val Leu Ala Val Asp Arg Glu Val Gly Lys Leu Gln Lys Glu Val
            900             905             910


Val Ile Ile Gln Gly Ser Leu Glu Gln Lys Leu Leu Glu Lys His Asn
            915             920             925


Leu Leu Leu Asp Cys Lys Val Gln Asp Ile Asp Ile Ser Leu Val Leu
        930             935             940


Gly Ser Leu Glu Asp Ile Ile Glu Met Glu Leu Thr Glu Thr Glu Ser
945             950             955             960


Thr Gln Ala Thr Ala Asp Ile Tyr Glu Lys Glu Ala Ser Ile Gln Ile
            965             970             975


Asp Tyr Ser Pro Leu Arg Glu Asp Leu Lys Ala Leu Gln Ser Asp Lys
            980             985             990


Glu Val Glu Ala His Leu Thr Leu  Leu Leu Gln Gln Val  Ala Ser Gln
        995             1000            1005


Glu Asn  Thr Leu Leu Lys Thr  Thr Ala Pro Asn Leu  Arg Ala Gln
    1010            1015            1020


Glu Asn  Leu Lys Thr Val Arg  Asp Lys Phe Gln Glu  Ser Ala Asp
    1025            1030            1035


Val Phe  Glu Ala Ser Arg Lys  Glu Ala Arg Ile Cys  Arg Gln Glu
    1040            1045            1050


Phe Glu  Gln Val Lys Arg Arg  Arg Tyr Asp Ala Phe  Ser Gln Cys
    1055            1060            1065


Phe Glu  His Ile Ser Val Ser  Ile Asp Gln Ile Tyr  Lys Lys Leu
    1070            1075            1080


Cys Arg  Asn Asn Ser Ala Gln  Ala Phe Leu Ser Pro  Glu Asn Pro
    1085            1090            1095


Glu Glu  Pro Tyr Leu Asp Gly  Ile Ser Tyr Asn Cys  Val Ala Pro
    1100            1105            1110
```

```
Gly Lys  Arg Phe Met Pro Met  Asp Asn Leu Ser Gly  Gly Glu Lys
    1115                 1120             1125

Cys Val  Ala Ala Leu Ala Leu  Leu Phe Ala Val His  Ser Phe Arg
    1130                 1135             1140

Pro Ala  Pro Phe Phe Val Leu  Asp Glu Val Asp Ala  Ala Leu Asp
    1145                 1150             1155

Asn Thr  Asn Ile Gly Lys Val  Ser Ser Tyr Ile Lys  Glu Gln Ser
    1160                 1165             1170

Gln Glu  Gln Phe Gln Met Ile  Ile Ile Ser Leu Lys  Glu Glu Phe
    1175                 1180             1185

Tyr Ser  Lys Ala Asp Ala Leu  Ile Gly Val Tyr Pro  Glu His Asn
    1190                 1195             1200

Glu Cys  Met Phe Ser His Val  Leu Thr Leu Asp Leu  Ser Lys Tyr
    1205                 1210             1215

Pro Asp  Thr Glu Asp Gln Glu  Gly Ser Arg Ser His  Arg Lys Pro
    1220                 1225             1230

Arg Val  Pro Arg Val Ser Met  Ser Pro Lys Ser Pro  Gln Ser Arg
    1235                 1240             1245
```

```
<210>  3
<211>  3839
<212>  DNA
<213>  Homo sapiens

<400>  3
cgcttttcc gcgggcgctt gataacgcgg gtgaggcgtg gagggcggcg ccatggccca     60

cctggagctg ctgcttgtgg aaaatttcaa gtcgtggcgg ggccgccagg tcattggccc    120

cttccggagg ttcacctgca tcatcggccc caacggctct ggaaaatcta atgtaatgga    180

tgcacttagt tttgtaatgg gagagaaaat agctaattta agagtgaaaa atattcaaga    240

actcattcat ggagcacata ttggaaaacc tatttcttct tctgcaagtg taaaaattat    300

atatgtggag gaaagtggcg aagagaaaac atttgcaagg attattttag ggggatgctc    360

agaatttcgc tttaatgata atcttgtgag tcgttctgtt tacattgcag agttggaaaa    420

gataggcata atagtcaaag cacaaaattg tttggttttt cagggaactg tagagtcaat    480

ttcagtgaag aaacccaaag aaaggaccca gttttttgag gaaatcagca cttcaggaga    540

gcttatagga gaatatgaag aaaagaaaag aaagttacaa aaagccgaag aggatgcaca    600

gtttaacttt aataagaaaa aaaatatagc ggcagagcgc agacaagcaa aattagagaa    660
```

```
ggaagaggca gaacgttacc agagtctcct tgaagaactg aaaatgaaca agatacaact   720
gcagcttttt caactatacc ataatgagaa aaagattcat ctcctgaaca ccaagttaga   780
gcatgtgaat agggatttga gtgtcaaaag agagtctttg tctcatcatg aaaacatagt   840
taaagccagg aaaaaggaac atggaatgct aactagacaa ctacaacaaa cagaaaaaga   900
attaaaatcg gttgaaaccc ttttaaatca gaagaggcct cagtacatta aagccaaaga   960
aaacacttct caccacctta agaaattaga tgtggctaag aaatcaataa aggacagcga   1020
aaaacaatgt tctaaacagg aagatgatat aaaagccctg gagacagagc tggctgattt   1080
agatgctgca tggagaagtt ttgaaaagca gattgaggaa gaaattttac ataaaaagcg   1140
agacattgaa ctggaagcca gtcagctgga tcgttataaa gaacttaagg aacaagtaag   1200
aaagaaagta gctacaatga ctcaacaact ggaaaaactg cagtgggaac agaagacaga   1260
tgaagaaaga ctggcatttg aaaagaggag gcatggagaa gttcagggaa atctaaaaca   1320
aataaaagaa caaatagaag atcataaaaa acgaatagag aagttagagg agtatacaaa   1380
gacatgcatg gattgcttga agagaaaaa acagcaagag gaaaccctag tggatgaaat   1440
tgaaaaaaca aaatcaagaa tgtctgaatt taatgaagaa ttgaatctta ttagaagtga   1500
attgcagaat gctgggattg atacccatga gggaaaacgt cagcaaaaga gagcagaggt   1560
tctggaacac cttaaaagac tgtacccaga ttctgtgttt ggaagactat ttgacctgtg   1620
tcatcctatt cataagaaat accagctggc tgttactaag gttttttggcc ggttcatcac   1680
tgccattgtt gtagcctctg aaaaggtagc aaaagattgt attcgatttc tgaaggagga   1740
aagagctgaa cctgagacat cctcgctct agattacctt gatatcaagc caatcaatga   1800
aagactaagg gagcttaaag ctgtaaaat ggtgattgat gtcataaaga ctcagtttcc   1860
tcagctgaag aaagtgattc agtttgtgtg tggaaatggt cttgtttgtg agactatgga   1920
agaagcaagg catattgcac tcagtggacc tgaaagacag aaaacagtag ctcttgatgg   1980
aacattattt ttaaaatctg gagtgatctc tggagggtca agtgacttaa aatacaaggc   2040
tagatgctgg gatgagaaag agttaaagaa tctaagagac agacgaagcc agaaaatcca   2100
agagctaaag ggtttaatga agacactccg caaagaaaca gatttgaaac aaatacagac   2160
cctgatacag ggaactcaaa cacgactcaa atattcacaa aatgaactag agatgattaa   2220
gaagaagcac cttgttgctt tttaccagga acaatctcag ttacaaagtg aactactaaa   2280
tattgagtct caatgtatta tgttgagtga aggaatcaag gaacgacaac gaagaattaa   2340
agaatttcaa gaaaagatag ataaggtaga agacgatatc ttccaacact tctgtgaaga   2400
aattggcgtg gaaaatattc gtgaatttga gaacaaacat gttaaacggc aacaagaaat   2460
tgatcaaaaa aggtattttt ataaaaagat gttgactcgg cttaatgttc aacttgagta   2520
tagtcgcagt caccttaaga agaaactgaa taagatcaac acattaaaag aaactatcca   2580
```

```
gaaaggtagt gaagatattg atcacctaaa gaaggctgaa gaaaactgtc tgcagacagt    2640

gaatgaactc atggcaaagc agcagcaact taaggacata cgtgtcactc agaactccag    2700

tgccgagaaa gttcaaactc aaattgaaga ggaacggaag aagtttctgg ctgttgatag    2760

ggaagtgggg aaattgcaaa aagaagttgt aagtattcaa acttctctgg aacagaaacg    2820

attagagaag cataacttgc tgcttgattg caaagtgcaa gacattgaga taatcctttt    2880

gtcggggtca ctggatgaca tcattgaagt ggagatggga actgaagcag aaagtaccca    2940

ggcaacaatt gatatctatg aaaaagaaga agcctttgaa atagactaca gctctctaaa    3000

agaggatttg aaggctctac agtctgatca agaaatcgag gcccacctta ggctcttatt    3060

gcagcaagta gcatcccagg aagatatctt actgaaaaca gcagccccaa acctacgagc    3120

actggagaac ttaaagactg tcagagacaa gtttcaagag tccacagatg cttttgaggc    3180

cagcagaaag gaagccagac tgtgtaggca agagttcgag caagtgaaaa aaaggagata    3240

cgatcttttc acccagtgtt ttgagcatgt ctcaatctca attgatcaaa tctacaagaa    3300

gctctgcaga aacaacagcg cccaagcatt tcttagccca gagaaccctg aagaacctta  . 3360

cttggaggga attagctata actgtgtggc cccaggcaaa cggtttatgc caatggacaa    3420

tttgtcaggg ggagaaaagt gtgtggcagc cttggctctc ctgtttgctg tgcacagttt    3480

tcgtcctgcc ccattctttg ttttagatga agtggatgca gccctagaca atactaacat    3540

aggcaaagtg tcaagttaca tcaaagagca aactcaagac cagtttcaga tgatagtcat    3600

ctccctaaaa gaagagttct attccagagc cgacgcgctg atcggcatct atcctgagta    3660

cgatgactgc atgttcagcc gagtttttgac cctagatctt tctcagtatc cagacactga    3720

aggccaagaa agcagcaaga gacacggaga gtcccgctag gggcagtcct gcagcagtca    3780

cctgatcact gttcagttcc cactctaata ctcacacagc tcctccacag gagacttct    3839
```

<210>   4
<211>   1235
<212>   PRT
<213>   Homo sapiens

<400>   4

Met Ala His Leu Glu Leu Leu Leu Val Glu Asn Phe Lys Ser Trp Arg
1   5   10   15

Gly Arg Gln Val Ile Gly Pro Phe Arg Arg Phe Thr Cys Ile Ile Gly
            20   25   30

Pro Asn Gly Ser Gly Lys Ser Asn Val Met Asp Ala Leu Ser Phe Val
        35   40   45

Met Gly Glu Lys Ile Ala Asn Leu Arg Val Lys Asn Ile Gln Glu Leu

- 10 -

                50   55   60

Ile His Gly Ala His Ile Gly Lys Pro Ile Ser Ser Ser Ala Ser Val
65   70   75   80

Lys Ile Ile Tyr Val Glu Glu Ser Gly Glu Glu Lys Thr Phe Ala Arg
                    85   90   95

Ile Ile Leu Gly Gly Cys Ser Glu Phe Arg Phe Asn Asp Asn Leu Val
                100   105   110

Ser Arg Ser Val Tyr Ile Ala Glu Leu Glu Lys Ile Gly Ile Ile Val
            115   120   125

Lys Ala Gln Asn Cys Leu Val Phe Gln Gly Thr Val Glu Ser Ile Ser
    130   135   140

Val Lys Lys Pro Lys Glu Arg Thr Gln Phe Phe Glu Glu Ile Ser Thr
145   150   155   160

Ser Gly Glu Leu Ile Gly Glu Tyr Glu Glu Lys Lys Arg Lys Leu Gln
                165   170   175

Lys Ala Glu Glu Asp Ala Gln Phe Asn Phe Asn Lys Lys Lys Asn Ile
            180   185   190

Ala Ala Glu Arg Arg Gln Ala Lys Leu Glu Lys Glu Glu Ala Glu Arg
            195   200   205

Tyr Gln Ser Leu Leu Glu Glu Leu Lys Met Asn Lys Ile Gln Leu Gln
    210   215   220   .

Leu Phe Gln Leu Tyr His Asn Glu Lys Lys Ile His Leu Leu Asn Thr
225   230   235   240

Lys Leu Glu His Val Asn Arg Asp Leu Ser Val Lys Arg Glu Ser Leu
            245   250   255

Ser His His Glu Asn Ile Val Lys Ala Arg Lys Lys Glu His Gly Met
            260   265   270

Leu Thr Arg Gln Leu Gln Gln Thr Glu Lys Glu Leu Lys Ser Val Glu
        275   280   285

Thr Leu Leu Asn Gln Lys Arg Pro Gln Tyr Ile Lys Ala Lys Glu Asn
    290   295   300

Thr Ser His His Leu Lys Lys Leu Asp Val Ala Lys Lys Ser Ile Lys
305   310   315   320

Asp Ser Glu Lys Gln Cys Ser Lys Gln Glu Asp Asp Ile Lys Ala Leu
                325   330   335

Glu Thr Glu Leu Ala Asp Leu Asp Ala Ala Trp Arg Ser Phe Glu Lys
            340   345   350

Gln Ile Glu Glu Glu Ile Leu His Lys Lys Arg Asp Ile Glu Leu Glu
            355   360   365

Ala Ser Gln Leu Asp Arg Tyr Lys Glu Leu Lys Glu Gln Val Arg Lys
    370   375   380

Lys Val Ala Thr Met Thr Gln Gln Leu Glu Lys Leu Gln Trp Glu Gln
385   390   395   400

Lys Thr Asp Glu Glu Arg Leu Ala Phe Glu Lys Arg Arg His Gly Glu
                405   410   415

Val Gln Gly Asn Leu Lys Gln Ile Lys Glu Gln Ile Glu Asp His Lys
            420   425   430

Lys Arg Ile Glu Lys Leu Glu Glu Tyr Thr Lys Thr Cys Met Asp Cys
        435   440   445

Leu Lys Glu Lys Lys Gln Gln Glu Glu Thr Leu Val Asp Glu Ile Glu
    450   455   460

Lys Thr Lys Ser Arg Met Ser Glu Phe Asn Glu Glu Leu Asn Leu Ile
465   470   475   480

Arg Ser Glu Leu Gln Asn Ala Gly Ile Asp Thr His Glu Gly Lys Arg
            485   490   495

Gln Gln Lys Arg Ala Glu Val Leu Glu His Leu Lys Arg Leu Tyr Pro
        500   505   510

Asp Ser Val Phe Gly Arg Leu Phe Asp Leu Cys His Pro Ile His Lys
        515   520   525

Lys Tyr Gln Leu Ala Val Thr Lys Val Phe Gly Arg Phe Ile Thr Ala
    530   535   540

Ile Val Val Ala Ser Glu Lys Val Ala Lys Asp Cys Ile Arg Phe Leu
545   550   555   560

Lys Glu Glu Arg Ala Glu Pro Glu Thr Phe Leu Ala Leu Asp Tyr Leu
              565   570   575

Asp Ile Lys Pro Ile Asn Glu Arg Leu Arg Glu Leu Lys Gly Cys Lys
              580   585   590

Met Val Ile Asp Val Ile Lys Thr Gln Phe Pro Gln Leu Lys Lys Val
              595   600   605

Ile Gln Phe Val Cys Gly Asn Gly Leu Val Cys Glu Thr Met Glu Glu
         610   615   620

Ala Arg His Ile Ala Leu Ser Gly Pro Glu Arg Gln Lys Thr Val Ala
625   630   635   640

Leu Asp Gly Thr Leu Phe Leu Lys Ser Gly Val Ile Ser Gly Gly Ser
              645   650   655

Ser Asp Leu Lys Tyr Lys Ala Arg Cys Trp Asp Glu Lys Glu Leu Lys
         660   665   670

Asn Leu Arg Asp Arg Arg Ser Gln Lys Ile Gln Glu Leu Lys Gly Leu
         675   680   685

Met Lys Thr Leu Arg Lys Glu Thr Asp Leu Lys Gln Ile Gln Thr Leu
         690   695   700

Ile Gln Gly Thr Gln Thr Arg Leu Lys Tyr Ser Gln Asn Glu Leu Glu
705   710   715   720

Met Ile Lys Lys Lys His Leu Val Ala Phe Tyr Gln Glu Gln Ser Gln
              725   730   735

Leu Gln Ser Glu Leu Leu Asn Ile Glu Ser Gln Cys Ile Met Leu Ser
              740   745   750

Glu Gly Ile Lys Glu Arg Gln Arg Arg Ile Lys Glu Phe Gln Glu Lys
         755   760   765

Ile Asp Lys Val Glu Asp Asp Ile Phe Gln His Phe Cys Glu Glu Ile
         770   775   780

Gly Val Glu Asn Ile Arg Glu Phe Glu Asn Lys His Val Lys Arg Gln
785   790   795   800

Gln Glu Ile Asp Gln Lys Arg Tyr Phe Tyr Lys Lys Met Leu Thr Arg
              805   810   815

- 13 -

```
Leu Asn Val Gln Leu Glu Tyr Ser Arg Ser His Leu Lys Lys Lys Leu
        820             825                 830


Asn Lys Ile Asn Thr Leu Lys Glu Thr Ile Gln Lys Gly Ser Glu Asp
        835             840                 845


Ile Asp His Leu Lys Lys Ala Glu Glu Asn Cys Leu Gln Thr Val Asn
    850             855                 860


Glu Leu Met Ala Lys Gln Gln Gln Leu Lys Asp Ile Arg Val Thr Gln
865             870             875                 880


Asn Ser Ser Ala Glu Lys Val Gln Thr Gln Ile Glu Glu Glu Arg Lys
                885             890                 895


Lys Phe Leu Ala Val Asp Arg Glu Val Gly Lys Leu Gln Lys Glu Val
        900             905                 910


Val Ser Ile Gln Thr Ser Leu Glu Gln Lys Arg Leu Glu Lys His Asn
        915         .       920                 925


Leu Leu Leu Asp Cys Lys Val Gln Asp Ile Glu Ile Ile Leu Leu Ser
   .  930             935                 940


Gly Ser Leu Asp Asp Ile Ile Glu Val Glu Met Gly Thr Glu Ala Glu
945             950                 955         .       960


Ser Thr Gln Ala Thr Ile Asp Ile Tyr Glu Lys Glu Glu Ala Phe Glu
            965                 970                 975


Ile Asp Tyr Ser Ser Leu Lys Glu Asp Leu Lys Ala Leu Gln Ser Asp
            980                 985                 990


Gln Glu Ile Glu Ala His Leu Arg  Leu Leu Leu Gln Gln  Val Ala Ser
        995             1000                1005


Gln Glu  Asp Ile Leu Leu Lys  Thr Ala Ala Pro Asn  Leu Arg Ala
    1010            1015                1020


Leu Glu  Asn Leu Lys Thr Val  Arg Asp Lys Phe Gln  Glu Ser Thr
    1025            1030                1035


Asp Ala  Phe Glu Ala Ser Arg  Lys Glu Ala Arg Leu  Cys Arg Gln
    1040            1045                1050


Glu Phe  Glu Gln Val Lys Lys  Arg Arg Tyr Asp Leu  Phe Thr Gln
    1055            1060                1065
```

- 14 -

```
Cys Phe Glu His Val Ser Ile  Ser Ile Asp Gln Ile  Tyr Lys Lys
    1070            1075               1080


Leu Cys Arg Asn Asn Ser Ala  Gln Ala Phe Leu Ser  Pro Glu Asn
    1085            1090               1095


Pro Glu Glu Pro Tyr Leu Glu  Gly Ile Ser Tyr Asn  Cys Val Ala
    1100            1105               1110


Pro Gly Lys Arg Phe Met Pro  Met Asp Asn Leu Ser  Gly Gly Glu
    1115            1120               1125


Lys Cys Val Ala Ala Leu Ala  Leu Leu Phe Ala Val  His Ser Phe
    1130            1135               1140


Arg Pro Ala Pro Phe Phe Val  Leu Asp Glu Val Asp  Ala Ala Leu
    1145            1150               1155


Asp Asn Thr Asn Ile Gly Lys  Val Ser Ser Tyr Ile  Lys Glu Gln
    1160            1165               1170


Thr Gln Asp Gln Phe Gln Met  Ile Val Ile Ser Leu  Lys Glu Glu
    1175            1180               1185


Phe Tyr Ser Arg Ala Asp Ala  Leu Ile Gly Ile Tyr  Pro Glu Tyr
    1190            1195               1200


Asp Asp Cys Met Phe Ser Arg  Val Leu Thr Leu Asp  Leu Ser Gln
    1205            1210               1215


Tyr Pro Asp Thr Glu Gly Gln  Glu Ser Ser Lys Arg  His Gly Glu
    1220            1225               1230


Ser Arg
    1235



<210>  5
<211>  1406
<212>  DNA
<213>  Homo sapiens

<400>  5
cctctgcggc gtcactggga gcccgacgga aaactgcgct aaaggcttgt ctttcccctg        60

cccgaccgaa ggagccgacc ttgcctgcgc tacagcttcc ttattttcgt cgcctgttct       120

cctgatcctg cgtgttctaa aaaccccttа ggctttccat gggttcccag accatggcgg       180

tggcgctgcc cagggacttg cggcaggacg ccaacctggc aaagaggagg cacgcggagc       240

tgtgcaggca gaagcgggtc ttcaacgcca gaaacaggat aattggggga gacactgaag       300
```

```
cctgggatgt tcaagttcat gaccagaaga taaaagaagc tactgaaaaa gctagacatg    360

aaacctttgc tgctgaaatg aggcaaaatg acaaaatcat gtgcatattg gaaaaccgga    420

aaaagaggga taggaaaaat ctctgtaggg ctatcaatga cttccaacag agctttcaga    480

agccagaaac tcgccgtgaa tttgatctgt ccgacccccт agcccttaag aaagatcttc    540

cagcccggca gtcagataat gatgttcgga atacgatatc aggaatgcag aaattcatgg    600

gagaggattt aaacttccat gagaggaaga aattccaaga ggaacaaaac agagaatggt    660

ctttgcagca gcaaagggaa tggaagaacg cccgtgctga acaaaaatgc gcagaggccc    720

tctacacaga gacaaggctg cagtttgacg agacagccaa gcacctccag aagctggaaa    780

gcaccaccag aaaggcagtt tgtgcatctg tgaaagactt caacaagagc caggccatcg    840

agtcagtgga aaggaaaaag caagagaaaa agcaagaaca gaggacaac ttggccgaga    900

tcaccaacct cctgcgtggg gacctgctct ccgagaaccc gcagcaggca gccagctcct    960

tcgggcccca ccgcgtggtc cctgaccgct ggaagggcat gacccaggag cagctggagc    1020

agatccgcct agtccagaag cagcaaatcc aggagaagct gaggctccag gaagaaaagc    1080

gccagcgaga cctggactgg gaccggcgga ggattcaggg ggctcgcgcc accctgctgt    1140.

ttgagcggca gcagtggcgg cggcagcgcg acctgcgcag agctctggac agcagcaacc    1200

tcagcctggc caaggagcag catttgcaga aaaatatat gaatgaagtc tatacaaatc    1260

aacccacggg agactatttc acacaattta atacaggaag tcgataatga ggaacacacc    1320

cttgttcccg tcattcacgt ataaagagtg ctaccttaa aaaaaaaaaa aaaaaaaaaa    1380

aaaaaaaaaa aaaaaaaaaa aaaaaa                                        1406
```

<210> 6
<211> 309
<212> PRT
<213> Homo sapiens

<400> 6

```
Met Arg Gln Asn Asp Lys Ile Met Cys Ile Leu Glu Asn Arg Lys Lys
1               5                   10                  15


Arg Asp Arg Lys Asn Leu Cys Arg Ala Ile Asn Asp Phe Gln Gln Ser
            20                  25                  30


Phe Gln Lys Pro Glu Thr Arg Arg Glu Phe Asp Leu Ser Asp Pro Leu
        35                  40                  45


Ala Leu Lys Lys Asp Leu Pro Ala Arg Gln Ser Asp Asn Asp Val Arg
    50                  55                  60


Asn Thr Ile Ser Gly Met Gln Lys Phe Met Gly Glu Asp Leu Asn Phe
```

65   70   75   80

His Glu Arg Lys Lys Phe Gln Glu Glu Gln Asn Arg Glu Trp Ser Leu
                    85   90   95

Gln Gln Gln Arg Glu Trp Lys Asn Ala Arg Ala Glu Gln Lys Cys Ala
            100   105   110

Glu Ala Leu Tyr Thr Glu Thr Arg Leu Gln Phe Asp Glu Thr Ala Lys
        115   120   125

His Leu Gln Lys Leu Glu Ser Thr Thr Arg Lys Ala Val Cys Ala Ser
    130   135   140

Val Lys Asp Phe Asn Lys Ser Gln Ala Ile Glu Ser Val Glu Arg Lys
145   150   155   160

Lys Gln Glu Lys Lys Gln Glu Gln Glu Asp Asn Leu Ala Glu Ile Thr
                    165   170   175

Asn Leu Leu Arg Gly Asp Leu Leu Ser Glu Asn Pro Gln Gln Ala Ala
                180   185   190

Ser Ser Phe Gly Pro His Arg Val Val Pro Asp Arg Trp Lys Gly Met
            195   200   205

Thr Gln Glu Gln Leu Glu Gln Ile Arg Leu Val Gln Lys Gln Gln Ile
    210   215   220

Gln Glu Lys Leu Arg Leu Gln Glu Glu Lys Arg Gln Arg Asp Leu Asp
225   230   235   240

Trp Asp Arg Arg Arg Ile Gln Gly Ala Arg Ala Thr Leu Leu Phe Glu
                245   250   255

Arg Gln Gln Trp Arg Arg Gln Arg Asp Leu Arg Arg Ala Leu Asp Ser
            260   265   270

Ser Asn Leu Ser Leu Ala Lys Glu Gln His Leu Gln Lys Lys Tyr Met
        275   280   285

Asn Glu Val Tyr Thr Asn Gln Pro Thr Gly Asp Tyr Phe Thr Gln Phe
    290   295   300

Asn Thr Gly Ser Arg
305

<210>   7
<211>   1654
<212>   DNA
<213>   Mus musculus

<400>   7

```
taattggatc cctgctccgc cgcggaaagc ggaccgccgg gacagacttg ctctcaaact      60

tttgtgggcg ctgcttctcg gcgctgtagc tttgcttatt tctgtgggct tttcttgccg     120

tgttttttt ttccggatag ctcctgaagc ccagccgagt cccagagcca tggaggtagc     180

gatgtctaag gacctacaac aggaggccaa cctagccaag aagcggtaca ttgacctgtg     240

caggcaggga cggatcttcg acgccaggaa caggatcatt gggggagaca cacaagcctg     300

ggattttcaa gtccgtgacc agaagataaa agaaataact gacaaagcta ggcatgaagc     360

ctttgctgct gaaatgaagc acaatgacaa agtcatgtgc atggcgcatg accgggaaca     420

gaggcacagg aaacagctgt gtagagctat caatgacttc cagcagaact ttcagaagcc     480

agaaactcga cgtgagtttg atctttctga cccctggcc ctccagaaag agcttccagc     540

ccgcatttca gacaatgaca tgcggaacac catatcagga atgcagaagt tcatgggaga     600

ggatttaaac ttccaagaga ggaggaggtt ccaaaaggaa cagagcagag aatggtttct     660

gcagcagcat ggggaacggg agaaagcccg ggctgaccac ctactggcag aacacctcca     720

cactcagacg agactcaagt ttgatgaaac agccagagag ttgatgaagc tggaaggctc     780

caccaggaag gaagtctgcg cagccgtgaa agcgttcaac aagaatcagg ttgtggagtt     840

gacagaaaga aagaggcaag agaagcaaca agaacaagaa gacaacatga ccgagatcac     900

caacctgctg catggagacc tgctttctga gaaccctcga ccggtggcca gctcctttgg     960

gtctcaccgt gtggtccttg accgctggaa gggcatgaac cgagagcagc tggaggagat    1020

ctggttcacg cagaagcggc aaatccagga gaagctgagg cttcaggagg aagagcgcca    1080

gcacagcatg gactgggatt tgcgcaggat ccggaaggct catgccagcc tgctgcatga    1140

gcggcagcag cagcgcttgc ttcgggagca gcgcagggcc ctggactgca gcaacctcaa    1200

cctggccagg cagcagtact tacagaaaaa acaaatgaat acagcctcct caagtcagcc    1260

cacagaagac tatttctcac agtttaatac aaggagccgc tgagagaacc gactgctttc    1320

cttgtttata gtagttcctc taggagtcac gcttatttca aagtgaatct gctccttggt    1380

ctgaacaccc cgtatgggca tgtgcacatg cggtcaggct ctgctctggg aagagctcta    1440

acatggcttt gggtgctgtg gacataggac acagtgaacc attccagaga ggctacactg    1500

aggcctgtgt gctgctcaag ctccaagctg gctgctcagc cattctctga ctcagtgact    1560

gaccatcata ggtgttgctt cgtgtgcccc atgaagcact tcttcctcag cttctcaccc    1620

accataaaga ggcaccaacc tgcttaccac tccc                                1654
```

<210> 8
<211> 309
<212> PRT
<213> Mus musculus

<400> 8

Met Lys His Asn Asp Lys Val Met Cys Met Ala His Asp Arg Glu Gln
1   5   10   15

Arg His Arg Lys Gln Leu Cys Arg Ala Ile Asn Asp Phe Gln Gln Asn
                20   25   30

Phe Gln Lys Pro Glu Thr Arg Arg Glu Phe Asp Leu Ser Asp Pro Leu
            35   40   45

Ala Leu Gln Lys Glu Leu Pro Ala Arg Ile Ser Asp Asn Asp Met Arg
     50   55   60

Asn Thr Ile Ser Gly Met Gln Lys Phe Met Gly Glu Asp Leu Asn Phe
65   70   75   80

Gln Glu Arg Arg Arg Phe Gln Lys Glu Gln Ser Arg Glu Trp Phe Leu
                85   90   95

Gln Gln His Gly Glu Arg Glu Lys Ala Arg Ala Asp His Leu Leu Ala
            100   105   110

Glu His Leu His Thr Gln Thr Arg Leu Lys Phe Asp Glu Thr Ala Arg
        115   120   125

Glu Leu Met Lys Leu Glu Gly Ser Thr Arg Lys Glu Val Cys Ala Ala
    130   135   140

Val Lys Ala Phe Asn Lys Asn Gln Val Val Glu Leu Thr Glu Arg Lys
145   150   155   160

Arg Gln Glu Lys Gln Gln Glu Gln Glu Asp Asn Met Thr Glu Ile Thr
                165   170   175

Asn Leu Leu His Gly Asp Leu Leu Ser Glu Asn Pro Arg Pro Val Ala
            180   185   190

Ser Ser Phe Gly Ser His Arg Val Val Leu Asp Arg Trp Lys Gly Met
        195   200   205

Asn Arg Glu Gln Leu Glu Glu Ile Trp Phe Thr Gln Lys Arg Gln Ile
    210   215   220

```
Gln Glu Lys Leu Arg Leu Gln Glu Glu Glu Arg Gln His Ser Met Asp
225             230             235             240


Trp Asp Leu Arg Arg Ile Arg Lys Ala His Ala Ser Leu Leu His Glu
                245             250             255


Arg Gln Gln Gln Arg Leu Leu Arg Glu Gln Arg Arg Ala Leu Asp Cys
            260             265             270


Ser Asn Leu Asn Leu Ala Arg Gln Gln Tyr Leu Gln Lys Lys Gln Met
            275             280             285


Asn Thr Ala Ser Ser Ser Gln Pro Thr Glu Asp Tyr Phe Ser Gln Phe
    290             295             300


Asn Thr Arg Ser Arg
305
```

```
<210>  9
<211>  336
<212>  DNA
<213>  Mus musculus


<220>
<221>  misc_feature
<222>  (108)..(108)
<223>  n is a, c, g, or t

<220>
<221>  misc_feature
<222>  (159)..(159)
<223>  n is a, c, g, or t

<220>
<221>  misc_feature
<222>  (178)..(178)
<223>  n is a, c, g, or t

<220>
<221>  misc_feature
<222>  (295)..(295)
<223>  n is a, c, g, or t

<220>
<221>  misc_feature
<222>  (333)..(333)
<223>  n is a, c, g, or t

<400>  9
gacattgtga tgtcacagtc tccatcctcc ctggctgtgt cagcaggaga gaaggtcact      60

atgagctgca aatccagtca gagtctgctc aacagtagaa cccgaaanaa ctacttgtct     120

tggtaccagc agaaaccagg tcagtctcct aaactgctna tctactgggc atccactngg     180

gaatctgggg tccctgatcg cttcacaggc agtggatctg ggacagattt cactctcacc     240
```

atcagcagtg tgcagactga agacctggca gtttattact gcaagcaatc ttatnatctc   300

ttcacgttcg gctcggggac aaagttggaa atnaaa   336

<210> 10
<211> 29
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic primer

<400> 10
ttttattaat cacggcaaga aaagcccac   29

<210> 11
<211> 25
<212> DNA
<213> Artificial sequence

<220>
<223> Synthetic primer

<400> 11
ttttaccggt gcctcagccg cttcc   25

<210> 12
<211> 278
<212> DNA
<213> Mus musculus

<400> 12
agaaaagccc acagaaataa gcaaagctac agcgccgaga agcagcgccc acaaaagttt   60

gagagcaagt ctgtcccggc ggtccgcttt ccgcagcgga gcagggatcc aattccccgg   120

gcaacgccaa cctccgttgt aagcaacggc gcctcgctcg ctctccttcc cccgcgccag   180

tctcgcgaga cttcgaaaag aatttcttcc cgcgcttttt tttttttttt tcctcacggg   240

agcacgagga agcggctgag gcacggcgcg cagccatg   278

<210> 13
<211> 267
<212> DNA
<213> Homo sapiens

<400> 13
agaacaggcg acgaaaataa ggaagctgta gcgcaggcaa ggtcggctcc ttcggtcggg   60

caggggaaag acaagccttt agcgcagttt tccgtcgggc tcccagtgac gccgcagagg   120

tacagacgct cccgctctct cggaaatgtc aacaactcgt tgctaaggaa cggctccgcg   180

cttgccgcgt ctcgctctct tctcgcgaca cttggcgaat cccttcccgc gcttttttccg   240

cgggcgcttg ataacgcggg tgaggcg   267